

UNIVERSITY OF MARYLAND, College Park

Physics 171 Introductory Physics: Mechanics and Relativity Spring 2017

Description: This course is the first semester of a three semester sequence for physics majors and those desiring a rigorous preparation in the physical sciences. Topics are described in the Contents and Schedule.
Prerequisites: A good high school physics course, MATH140, MATH141 (can be concurrently enrolled).

Lectures: Tu Th 12:30pm - 1:45pm, Fri 12:00am - 12:50pm in [PHY 1204](#)
Lecturer: Prof. B. L. Hu, Office: PSC3153, Phone: (301)405-6029, Email: blhu@umd.edu Toll Bldg Mailbox #425. Office hours: Tu Th 2-3pm. Please email me hubeilok@gmail.com if you intend to come.
TA: Andrew SyBing Office: Z1209, Phone: (240) 505-5990 Email: asybing@terpmail.umd.edu, Box: 434

Textbooks Required: Douglas C. Giancoli, *Physics for Scientists and Engineers 4thed* (Pearson 2009)

Reading: The approximate progression of topics can be found in the Course Schedule for the planned topic for each lecture. The schedule may lag or advance by one lecture if some topics take more or less time than expected. To enhance your comprehension of a particular subject to be covered, you *should try to read the material in the text before coming to the lecture*. This will enable you to ask questions about ideas you may not be able to grasp fully on the first reading and to gain a better overall perspective. Read it again after the lecture, study the examples and do the assigned problems. I encourage questions in class (to the extent time permitting, but that can be followed up in my office hours) – this could stimulate thoughts and discussions.

Course webpage: Please check for new announcements, adjustment of topics or due dates in the course website at ELMS/CANVAS system: www.elms.umd.edu/page/student-support where you will also be able to access your exam grades. For questions call the Help Desk at 301.405.1500 or email elms@umd.edu.

Homework: 13 sets of homework problems are planned, counting 30% towards your course grade. They are to be worked out and handed in at the beginning of classes on the due dates -- check the course webpage for last minute changes. Solutions will be posted soon after thus no late homework will be accepted. I encourage group discussions but stress strongly the importance of thinking through and working out the problems on your own. *Don't rely on others' help or just passively read the solutions*. It makes a real difference in your grasp of the subject matter which shows clearly in your examination performance.

Mid-Term Exams: Two 75-minute closed book mid-term exams are scheduled on **Tuesday March 7 and Thursday April 20 during the lecture periods**. Each exam is likely to contain one or more problems based on the assigned homework problems. Each exam counts 20% towards your course grade. Please make all necessary preparations and arrangements to **make sure you can take these exams** because no make-up exam will be given.

The Final Exam held on **Thursday May 18, 1:30 -3:30pm**, is worth 30% of the course grade. It is comprehensive, with proportionately more materials from Chap 26, 17-20. University rule requires all students must take the final exam to receive a course grade, otherwise your course grade will be an F.

Exams are meant to test your understanding and ability to apply concepts covered in the course, not how well you can memorize the formulas or course materials. You may bring one 4x6" formulas card to each exam, totaling 3 for the final exam. The values of constants and useful integrals will be provided. Only a non-programmable calculator with standard trigonometry function is allowed, no smart phones, I-Pads etc. **Academic dishonesty is a serious violation** and will be dealt with strictly, according to University policy.

Course Grade: Your course grade is made up in the composition of 30% homework, 20% for each of the 2 mid-term exams, and 30% from your final exam scores. Total course score has 500 points maximum.

PHYSICS 171 Spring 2017 CONTENTS and SCHEDULE

Prof. B. L. Hu

Lectures: Week/Date	Readings: Chapters in <i>Giancoli, Physics for Sci & Eng</i> 4 th ed 2009	Topics:	Homework # Due Date: Fridays
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1,2 1/26, 27, 31 Chap **1** (read) **2** Kinematics: One dimensional motion **#1** 2/3

2,3 2/2,3, 7 Chap **3** Kinematics in 2 & 3 dimensions; Vectors **#2** 2/10

3,4 2/9,10,14 Chap **4-5** Dynamics: Newton's Laws of Motion, Friction **#3** 2/17

4,5 2/16,17,21 Chap **5-6** Circular motion, Gravitation **#4** 2/24

5 2/23,24 Chap **6** Gravitation **#5** 3/3

6 2/28,3/2,3 Chap **7** Work and Energy **#6** 3/10

March 7 (Tuesday) Exam 1 (Chapters 2-6)

7. 3/9, 10 Chap **8** Conservation of Energy **#7** 3/17

8 3/14,16,17 Chap **9** Linear Momentum **#8** 3/31

9 3/19-3/26 *Spring Break*

10 3/28, 30, 31 Chap **10** Rotational Motion **#9** 4/7

11 4/4, 6, 7 Chap **11** Angular Momentum, excluding Sec 7-9 **#10** 4/14

12-13 4/11,13,14,18 Chap **36** Theory of Special Relativity **#11** 4/28

April 20 (Thursday) Exam 2 (Chapters 7-11)

13 4/21 Chap **17** Temperature. Thermal Expansion. Ideal Gas Law (exclude Sec 5)

14 4/25, 27, 28 Chap **18** Kinetic Theory of Gas (mainly Sec 1-2 and Sec 6-7) **#12** 5/5

15 5/2, 5/4 Chap **19** Heat and First Law of Thermodynamics **#13** 5/11 (Thursday)

15-16 5/5, 9, 11 Chap **20** Second Law of Thermodynamics **#14** (*no need to hand in*)

May 18 Thur, 1:30 -3:30pm Final Exam (Comprehensive, more from Chap 36,17-20)

*** *Have an Enjoyable and Productive Summer!* ***